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June 22, 2016

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF I16-023
Work Order: 398286
SDG: GEL398286

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 27, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071JDBA 7H
Chain of Custody: I16-023-111, I16-023-121, I16-023-122 and I16-023-124
Enclosures



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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF I16-023
SDG: GEL398286**

June 22, 2016

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on May 27, 2016, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative and DER.

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
398286001	B34YC3
398286002	B34YC6
398286003	B34YN4
398286004	B34YN7
398286005	B34YP6
398286006	B34YP9
398286007	B34YW4
398286008	B34YW1

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Metals and Radiochemistry.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

**Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL398286
Work Order #: 398286**

Metals

Determination of Metals by ICP

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 398286001 (B34YC3), 398286002 (B34YC6), 398286003 (B34YN4), 398286004 (B34YN7), 398286005 (B34YP6), 398286006 (B34YP9), 398286007 (B34YW4) and 398286008 (B34YW1).

Determination of Metals by ICP-MS

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of antimony. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203557722 (MB).

Determination of Metals by ICP-MS

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Radiochemistry

SRISO_SEP_PRECIP_GPC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 398286008 (B34YW1) was verified by recounting at least five days from the separation date. The recount is reported.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
116-023-111

Page 1 of 1

398280

Collector	Karen Campbell CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	116-023	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	100KR4, MAY 2016	Logbook No.	HNF-N-506 <u>83 / 76</u>	Ice Chest No.	<u>6005 - S17</u>
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	<u>776380874849</u>
Protocol	CERCLA	Priority:	30 Days	PRIORITY	Offsite Property No. <u>60660</u>
POSSIBLE SAMPLE HAZARDS/REMARKS					
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1					
N/A Special Handling:N/A					

Sample No.	Filter *	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B34YC3	N	W	5-25-16	1318	1x500-mL G/P	6010_METALS_ICP: COMMON; 6010_METALS_ICP: GW 03	6 Months	HNO3 to pH <2
B34YC6	Y	W	5-25-16	1318	1x500-mL G/P	6010_METALS_ICP: COMMON; 6010_METALS_ICP: GW 03	6 Months	HNO3 to pH <2

Relinquished By Karen Campbell CHPRC	Print <u>Karen Campbell</u>	Sign <u>MAY 25 2016</u>	Date/Time <u>1420</u>	Received By <u>SSU-1</u>	Print <u>MAY 25 2016</u>	Sign <u>1420</u>	Date/Time <u>MAY 25 2016</u>	Matrix * S = Soil
Relinquished By <u>S5U 4 i</u>	Print <u>C.M. Aguilar/CHPRC</u>	Sign <u>MAY 26 2016</u>	Date/Time <u>0825</u>	Received By <u>SSU-1</u>	Print <u>MAY 26 2016</u>	Sign <u>0825</u>	Date/Time <u>MAY 26 2016</u>	DS = Drum Solids SE = Sediment SO = Solid
Relinquished By <u>C.M. Aguilar/CHPRC</u>	Print <u>MAY 26 2016</u>	Sign <u>1400</u>	Date/Time <u>1400</u>	Received By <u>F D C</u>	Print <u>MAY 26 2016</u>	Sign <u>1400</u>	Date/Time <u>MAY 26 2016</u>	DL = Drum Liquids T = Tissue SL = Sludge W = Water
Relinquished By <u>9 of 54</u>	Print <u>9 of 54</u>	Sign <u>MAY 27 2016</u>	Date/Time <u>0930</u>	Received By <u>M. Lusk</u>	Print <u>MAY 27 2016</u>	Sign <u>0930</u>	Date/Time <u>MAY 27 2016</u>	Oil V = Vegetation Air X = Other
FINAL SAMPLE	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By				Date/Time
DISPOSITION								A-6004-842 (REV 2)

CH2MHill Plateau Remediation
Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
116-023-121

Page 1 of 1

398280

Collector	Karen Campbell CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	116-023	Sampling Origin	Hanford Site	Purchase Order/Charge Code	3000071
Project Title	100KR4, MAY 2016	Logbook No.	HNF-N-506 <u>82 / 76</u>	Ice Chest No.	GiuS-S17
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	71163800874849
Protocol	CERCLA	Priority:	30 Days	PRIORITY	Offsite Property No. <u>66660</u>
POSSIBLE HAZARDS/REMARKS			SPECIAL INSTRUCTIONS		
*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1			N/A Special Handling:N/A		
Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B34YN4	N	W	5-25-16	12:50	1x500-mL G/P 6010 METALS ICP: COMMON; 6010 METALS ICP: GW 03	6 Months	HNO3 to pH <2
B34YN7	Y	W	5-25-16	12:50	1x500-mL G/P 6010 METALS ICP: COMMON; 6010 METALS ICP: GW 03	6 Months	HNO3 to pH <2

Reinquished By Karen Campbell CHPRC	Print <u>Karen Campbell</u>	Sign <u>MAY 25 2016</u>	Date/Time <u>1400</u>	Received By SSU-1	Print <u>C.M. Aguilar/CHPRC</u>	Sign <u>MAY 25 2016</u>	Date/Time <u>1400</u>	Matrix *
Reinquished By SSU-1			Date/Time <u>MAY 26 2016 0835</u>				Date/Time <u>MAY 26 2016 0835</u>	SE = Soil SO = Sediment SL = Sludge W = Water O = Oil A = Air
Reinquished By <u>C.M. Aguilar/CHPRC</u>			Date/Time <u>MAY 26 2016 1400</u>				Date/Time <u>1400</u>	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Reinquished By 10 of 14			Date/Time <u>1400</u>				Date/Time <u>1400</u>	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)							Disposed By <u>M. Kishan Mithal</u>
								Date/Time

CH2MHill Plateau Remediation
Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
116-023-122

Page 1 of 1

Collector	Karen Campbell CHFRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	116-023	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	100KRA, MAY 2016	Logbook No.	HNF-N-506 <u>73176</u>	Ice Chest No.	<u>G1W5-S17</u>
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	<u>71003800874849</u>
Protocol	CERCLA	Priority:	30 Days	PRIORITY	<u>6660</u>
POSSIBLE SAMPLE HAZARDS/REMARKS			SPECIAL INSTRUCTIONS		
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1			N/A Special Handling:N/A		

Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B34YP6	N	W 5-25-16	1305	1x500-mL G/P	6010_METALS_ICP: COMMON; 6010_METALS_ICP: GW 03	6 Months	HNO3 to pH <2
B34YP9	Y	W 5-25-16	1305	1x500-mL G/P	6010_METALS_ICP: COMMON; 6010_METALS_ICP: GW 03	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
Karen Campbell CHFRC	<u>Karen Campbell</u>	<u>MAY 25 2016 /170</u>	<u>SSU-1</u>				<u>MAY 25 2016 /170</u>	S = Soil
Relinquished By			Date/Time	Received By			Date/Time	DS = Drum Solids
SSU-1	<u>MAY 26 2016</u>	<u>0825</u>		<u>C.M. Aguilar/CHFRC CMQ</u>	<u>MAY 26 2016</u>	<u>0825</u>		SE = Sediment
Relinquished By			Date/Time	Received By			Date/Time	DL = Drum Liquids
C.M. Aguilar/CHFRC CMQ	<u>MAY 26 2016</u>	<u>1400</u>		<u>FEO</u>				SO = Solid
Relinquished By			Date/Time	Received By			Date/Time	T = Tissue
1 of 4	<u>RJ</u>			<u>M. Grisham/MH</u>	<u>5-27-16</u>	<u>0930</u>		SL = Sludge
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By				WI = Wipe
								L = Liquid
								O = Oil
								V = Vegetation
								A = Air
								X = Other

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

298286

C.O.C. #
116-023-124

Page 1 of 1

Collector	Karen Campbell CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650																								
SAF No.	116-023	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071																								
Project Title	100KR4, MAY 2016	Logbook No.	HNF-N-506 7J / 26	Ice Chest No.	6wsS-S17																								
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No. 7763 8087 4849																									
Protocol	CERCLA	Priority:	30 Days	PRIORITY	Offsite Property No. 16660																								
POSSIBLE SAMPLE HAZARDS/REMARKS			SPECIAL INSTRUCTIONS																										
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1			N/A Special Handling: N/A																										
<table border="1"> <thead> <tr> <th>Sample No.</th> <th>Filter *</th> <th>Date</th> <th>Time</th> <th>No./Type Container</th> <th>Sample Analysis</th> </tr> </thead> <tbody> <tr> <td>B34YW4</td> <td>Y</td> <td>W</td> <td>5-25-16</td> <td>1215</td> <td>1x500-mL G/P 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04</td> </tr> <tr> <td>B34YW1</td> <td>N</td> <td>W</td> <td>5-25-16</td> <td>1215</td> <td>1x500-mL G/P 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04</td> </tr> <tr> <td>B34YW1</td> <td>N</td> <td>W</td> <td>5-25-16</td> <td>1215</td> <td>3x1-L G/P SRISO_SEP_PRECIP_GPC: COMMON</td> </tr> </tbody> </table>						Sample No.	Filter *	Date	Time	No./Type Container	Sample Analysis	B34YW4	Y	W	5-25-16	1215	1x500-mL G/P 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	B34YW1	N	W	5-25-16	1215	1x500-mL G/P 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	B34YW1	N	W	5-25-16	1215	3x1-L G/P SRISO_SEP_PRECIP_GPC: COMMON
Sample No.	Filter *	Date	Time	No./Type Container	Sample Analysis																								
B34YW4	Y	W	5-25-16	1215	1x500-mL G/P 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04																								
B34YW1	N	W	5-25-16	1215	1x500-mL G/P 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04																								
B34YW1	N	W	5-25-16	1215	3x1-L G/P SRISO_SEP_PRECIP_GPC: COMMON																								

Sample No.	Filter *	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B34YW4	Y	W	5-25-16	1215	1x500-mL G/P 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B34YW1	N	W	5-25-16	1215	1x500-mL G/P 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B34YW1	N	W	5-25-16	1215	3x1-L G/P SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2

Relinquished By Karen Campbell CHPRC	Print <i>Karen Campbell</i>	Sign <i>MAY 25 2016</i>	Date/Time MAY 25 2016 1420	Received By C.M. Aguilar/CHPRC	Print <i>C.M. Aguilar</i>	Sign <i>MAY 26 2016</i>	Date/Time MAY 26 2016 0825	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By <i>SSU-1</i>	Print <i>MAY 26 2016</i>	Sign <i>0825</i>	Date/Time MAY 26 2016 0825	Received By Felix				DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By C.M. Aguilar/CHPRC	Print <i>MAY 26 2016</i>	Sign <i>1400</i>	Date/Time MAY 26 2016 1400	Received By M. Larson				
Relinquished By 12 of 54	Print <i>1400</i>	Sign <i>52716 0950</i>	Date/Time 52716 0950	Disposed By <i>M. Larson</i>				Date/Time 52716 0950

FINAL SAMPLE Disposal Method (e.g., Return to customer, per lab procedure, used in process)

DISPOSITION Disposed By



SAMPLE RECEIPT & REVIEW FORM

Client:	CPRC			SDG/AR/COC/Work Order:	398280		
Received By:	MIC			Date Received:	5-27-16		
Suspected Hazard Information	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.				
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/> Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>cprc - 0</u>						
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/> If yes, Were swipes taken of sample containers < action levels?						
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>						
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/> If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.						
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/> Hazard Class Shipped: UN#: _____						
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>						
Sample Receipt Criteria		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Comments/Qualifiers (Required for Non-Conforming Items)			
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)				
2 Samples requiring cold preservation within ($0 \leq 6$ deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>2 C</u> <u>3 C</u>				
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130461462</u> Secondary Temperature Device Serial # (If Applicable):				
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)				
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:				
6 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: (If unknown, select No)				
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: (If yes, immediately deliver to Volatiles laboratory)				
9 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:				
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:				
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:				
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:				
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
16 Carrier and tracking number.	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7763 8384 4157 2 C*</u> <u>7472 1516 3 C</u> <u>7472 1674 3 C</u> <u>8087 4849 2 C*</u>				
Comments (Use Continuation Form if needed):							

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The associated QC sample blank has a result \geq 2X the MDA and, after corrections, result is \geq MDA for this sample	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy—Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 22 June 2016

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL398286
Work Order #: 398286

Product: Determination of Metals by ICP

Analytical Method: 6010_METALS_ICP

Analytical Procedure: GL-MA-E-013 REV# 26

Analytical Batch: 1570819

Product: Determination of Metals by ICP-MS

Analytical Method: 6020_METALS_ICPMS

Analytical Procedure: GL-MA-E-014 REV# 28

Analytical Batches: 1570822 and 1573425

Preparation Method: SW846 3005A

Preparation Procedure: GL-MA-E-006 REV# 13

Preparation Batches: 1570818, 1570821 and 1573424

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398286001	B34YC3
398286002	B34YC6
398286003	B34YN4
398286004	B34YN7
398286005	B34YP6
398286006	B34YP9
398286007	B34YW4
398286008	B34YW1
1203557709	Method Blank (MB)ICP
1203557710	Laboratory Control Sample (LCS)
1203557713	398282001(NonSDGL) Serial Dilution (SD)
1203557711	398282001(NonSDGS) Matrix Spike (MS)
1203557712	398282001(NonSDGSD) Matrix Spike Duplicate (MSD)
1203557722	Method Blank (MB)ICP-MS
1203564606	Method Blank (MB)ICP-MS
1203557723	Laboratory Control Sample (LCS)
1203564607	Laboratory Control Sample (LCS)
1203557726	398282001(NonSDGL) Serial Dilution (SD)
1203564610	398282001(NonSDGL) Serial Dilution (SD)
1203557724	398282001(NonSDGS) Matrix Spike (MS)
1203564608	398282001(NonSDGS) Matrix Spike (MS)
1203557725	398282001(NonSDGSD) Matrix Spike Duplicate (MSD)
1203564609	398282001(NonSDGSD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and

procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 398286001 (B34YC3), 398286002 (B34YC6), 398286003 (B34YN4), 398286004 (B34YN7), 398286005 (B34YP6), 398286006 (B34YP9), 398286007 (B34YW4) and 398286008 (B34YW1)-ICP.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of antimony. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203557722 (MB)-ICP-MS.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company
Client SDG: GEL398286 GEL Work Order: 398286

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- D Results are reported from a diluted aliquot of sample.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: **Nik-Cole Elmore**

Date: **23 JUN 2016**

Title: **Data Validator**

Sample Data Summary

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398286**CONTRACT:** CPRC0I16023**METHOD TYPE:** SW846**SAMPLE ID:** 398286001**BASIS:** As Received**DATE COLLECTED** 25-MAY-16**CLIENT ID:** B34YC3**LEVEL:** Low**DATE RECEIVED** 27-MAY-16**MATRIX:** WATER**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-38-2	Arsenic	5	ug/L	U	5	30	30	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-39-3	Barium	30.1	ug/L		1	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-70-2	Calcium	35000	ug/L		50	200	200	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-47-3	Chromium	3.9	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-50-8	Copper	9.15	ug/L	B	3	10	10	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7439-95-4	Magnesium	9590	ug/L		110	300	300	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-02-0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-09-7	Potassium	4070	ug/L		50	150	150	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-23-5	Sodium	27800	ug/L		100	300	300	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-24-6	Strontium	204	ug/L		1	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-62-2	Vanadium	14.1	ug/L		1	5	5	1	P	JWJ	05/31/16 20:16	053116B-1	1570819
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	JWJ	05/31/16 20:16	053116B-1	1570819

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570819	1570818	SW846 3005A	50	mL	50	mL	05/31/16	SXW1

***Analytical Methods:**

P SW846 3005A/6010C

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398286**CONTRACT:** CPRC0I16023**METHOD TYPE:** SW846**SAMPLE ID:** 398286002**BASIS:** As Received**DATE COLLECTED** 25-MAY-16**CLIENT ID:** B34YC6**LEVEL:** Low**DATE RECEIVED** 27-MAY-16**MATRIX:** WATER**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-38-2	Arsenic	5.81	ug/L	B	5	30	30	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-39-3	Barium	29.8	ug/L		1	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-70-2	Calcium	34500	ug/L		50	200	200	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-47-3	Chromium	2.91	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-50-8	Copper	9.46	ug/L	B	3	10	10	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7439-95-4	Magnesium	9690	ug/L		110	300	300	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-02-0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-09-7	Potassium	3980	ug/L		50	150	150	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-23-5	Sodium	27600	ug/L		100	300	300	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-24-6	Strontium	202	ug/L		1	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-62-2	Vanadium	13.8	ug/L		1	5	5	1	P	JWJ	05/31/16 20:19	053116B-1	1570819
7440-66-6	Zinc	4.86	ug/L	B	3.3	10	10	1	P	JWJ	05/31/16 20:19	053116B-1	1570819

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570819	1570818	SW846 3005A	50	mL	50	mL	05/31/16	SXW1

***Analytical Methods:**

P SW846 3005A/6010C

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398286**CONTRACT:** CPRC0I16023**METHOD TYPE:** SW846**SAMPLE ID:** 398286003**BASIS:** As Received**DATE COLLECTED** 25-MAY-16**CLIENT ID:** B34YN4**LEVEL:** Low**DATE RECEIVED** 27-MAY-16**MATRIX:** WATER**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-38-2	Arsenic	5	ug/L	U	5	30	30	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-39-3	Barium	13.7	ug/L		1	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-70-2	Calcium	26200	ug/L		50	200	200	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-47-3	Chromium	4.94	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-50-8	Copper	10.6	ug/L		3	10	10	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7439-95-4	Magnesium	5070	ug/L		110	300	300	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-02-0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-09-7	Potassium	2000	ug/L		50	150	150	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-23-5	Sodium	3970	ug/L		100	300	300	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-24-6	Strontium	111	ug/L		1	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-62-2	Vanadium	5.32	ug/L		1	5	5	1	P	JWJ	05/31/16 20:22	053116B-1	1570819
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	JWJ	05/31/16 20:22	053116B-1	1570819

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570819	1570818	SW846 3005A	50	mL	50	mL	05/31/16	SXW1

***Analytical Methods:**

P SW846 3005A/6010C

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398286**CONTRACT:** CPRC0I16023**METHOD TYPE:** SW846**SAMPLE ID:** 398286004**BASIS:** As Received**DATE COLLECTED** 25-MAY-16**CLIENT ID:** B34YN7**LEVEL:** Low**DATE RECEIVED** 27-MAY-16**MATRIX:** WATER**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-38-2	Arsenic	6.74	ug/L	B	5	30	30	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-39-3	Barium	14	ug/L		1	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-70-2	Calcium	26100	ug/L		50	200	200	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-47-3	Chromium	4.94	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-50-8	Copper	10.9	ug/L		3	10	10	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7439-95-4	Magnesium	5000	ug/L		110	300	300	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-02-0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-09-7	Potassium	1970	ug/L		50	150	150	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-23-5	Sodium	3970	ug/L		100	300	300	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-24-6	Strontium	110	ug/L		1	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-62-2	Vanadium	5.47	ug/L		1	5	5	1	P	JWJ	05/31/16 20:31	053116B-1	1570819
7440-66-6	Zinc	3.78	ug/L	B	3.3	10	10	1	P	JWJ	05/31/16 20:31	053116B-1	1570819

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570819	1570818	SW846 3005A	50	mL	50	mL	05/31/16	SXW1

***Analytical Methods:**

P SW846 3005A/6010C

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398286**CONTRACT:** CPRC0I16023**METHOD TYPE:** SW846**SAMPLE ID:** 398286005**BASIS:** As Received**DATE COLLECTED** 25-MAY-16**CLIENT ID:** B34YP6**LEVEL:** Low**DATE RECEIVED** 27-MAY-16**MATRIX:** WATER**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-38-2	Arsenic	7.53	ug/L	B	5	30	30	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-39-3	Barium	36.2	ug/L		1	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-70-2	Calcium	38000	ug/L		50	200	200	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-47-3	Chromium	4.52	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-50-8	Copper	9.07	ug/L	B	3	10	10	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7439-95-4	Magnesium	11100	ug/L		110	300	300	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-02-0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-09-7	Potassium	4570	ug/L		50	150	150	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-23-5	Sodium	31900	ug/L		100	300	300	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-24-6	Strontium	248	ug/L		1	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-62-2	Vanadium	16.7	ug/L		1	5	5	1	P	JWJ	05/31/16 20:33	053116B-1	1570819
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	JWJ	05/31/16 20:33	053116B-1	1570819

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570819	1570818	SW846 3005A	50	mL	50	mL	05/31/16	SXW1

***Analytical Methods:**

P SW846 3005A/6010C

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398286**CONTRACT:** CPRC0I16023**METHOD TYPE:** SW846**SAMPLE ID:** 398286006**BASIS:** As Received**DATE COLLECTED** 25-MAY-16**CLIENT ID:** B34YP9**LEVEL:** Low**DATE RECEIVED** 27-MAY-16**MATRIX:** WATER**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-38-2	Arsenic	6.94	ug/L	B	5	30	30	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-39-3	Barium	36	ug/L		1	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-70-2	Calcium	38000	ug/L		50	200	200	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-47-3	Chromium	4.52	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-48-4	Cobalt	1.14	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-50-8	Copper	9.9	ug/L	B	3	10	10	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7439-95-4	Magnesium	11000	ug/L		110	300	300	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-02-0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-09-7	Potassium	4570	ug/L		50	150	150	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-23-5	Sodium	31900	ug/L		100	300	300	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-24-6	Strontium	247	ug/L		1	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-62-2	Vanadium	15.5	ug/L		1	5	5	1	P	JWJ	05/31/16 20:36	053116B-1	1570819
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	JWJ	05/31/16 20:36	053116B-1	1570819

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570819	1570818	SW846 3005A	50	mL	50	mL	05/31/16	SXW1

Analytical Methods:*P** SW846 3005A/6010C

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398286**CONTRACT:** CPRC0I16023**METHOD TYPE:** SW846**SAMPLE ID:** 398286007**BASIS:** As Received**DATE COLLECTED** 25-MAY-16**CLIENT ID:** B34YW4**LEVEL:** Low**DATE RECEIVED** 27-MAY-16**MATRIX:** WATER**%SOLIDS:**

0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	15	ug/L	U	15	50	50	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-38-2	Arsenic	1.7	ug/L	U	1.7	5	5	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-39-3	Barium	13.4	ug/L		0.6	2	2	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/17/16 08:18	160616-5	1573425
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	05/31/16 20:39	053116B-1	1570819
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-70-2	Calcium	26000	ug/L		50	200	200	1	P	JWJ	05/31/16 20:39	053116B-1	1570819
7440-47-3	Chromium	4.17	ug/L	B	2	10	10	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-48-4	Cobalt	0.10	ug/L	U	0.1	1	1	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-50-8	Copper	12.3	ug/L		0.35	1	1	1	MS	PRB	06/08/16 23:26	160608-3	1570822
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/31/16 20:39	053116B-1	1570819
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7439-95-4	Magnesium	5180	ug/L		110	300	300	1	P	JWJ	05/31/16 20:39	053116B-1	1570819
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7439-98-7	Molybdenum	0.885	ug/L		0.165	0.5	0.5	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-02-0	Nickel	0.717	ug/L	B	0.5	2	2	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-09-7	Potassium	1810	ug/L		50	150	150	1	P	JWJ	05/31/16 20:39	053116B-1	1570819
7782-49-2	Selenium	1.73	ug/L	B	1.5	5	5	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-23-5	Sodium	3660	ug/L		100	300	300	1	P	JWJ	05/31/16 20:39	053116B-1	1570819
7440-24-6	Strontium	128	ug/L		2	10	10	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-29-1	Thorium	0.383	ug/L	U	0.383	2	2	1	MS	PRB	06/09/16 00:40	160608-4	1570822
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BCD1	06/03/16 16:50	160603-2	1570822
7440-61-1	Uranium	0.544	ug/L		0.067	0.2	0.2	1	MS	PRB	06/09/16 00:40	160608-4	1570822
7440-62-2	Vanadium	3.32	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:39	053116B-1	1570819
7440-66-6	Zinc	13.8	ug/L		3.5	10	10	1	MS	BCD1	06/03/16 16:50	160603-2	1570822

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570819	1570818	SW846 3005A	50	mL	50	mL	05/31/16	SXW1
1570822	1570821	SW846 3005A	50	mL	50	mL	05/31/16	SXW1
1573425	1573424	SW846 3005A	25	mL	25	mL	06/13/16	JP1

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

***Analytical Methods:**

P	SW846 3005A/6010C
MS	SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398286**CONTRACT:** CPRC0I16023**METHOD TYPE:** SW846**SAMPLE ID:** 398286008**BASIS:** As Received**DATE COLLECTED** 25-MAY-16**CLIENT ID:** B34YW1**LEVEL:** Low**DATE RECEIVED** 27-MAY-16**MATRIX:** WATER**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	15	ug/L	U	15	50	50	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-38-2	Arsenic	1.7	ug/L	U	1.7	5	5	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-39-3	Barium	13.5	ug/L		0.6	2	2	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/17/16 08:19	160616-5	1573425
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	05/31/16 20:42	053116B-1	1570819
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-70-2	Calcium	26200	ug/L		50	200	200	1	P	JWJ	05/31/16 20:42	053116B-1	1570819
7440-47-3	Chromium	4.13	ug/L	B	2	10	10	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-48-4	Cobalt	0.10	ug/L	U	0.1	1	1	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-50-8	Copper	17.4	ug/L		0.35	1	1	1	MS	PRB	06/08/16 23:29	160608-3	1570822
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/31/16 20:42	053116B-1	1570819
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7439-95-4	Magnesium	5250	ug/L		110	300	300	1	P	JWJ	05/31/16 20:42	053116B-1	1570819
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7439-98-7	Molybdenum	0.858	ug/L		0.165	0.5	0.5	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-02-0	Nickel	0.696	ug/L	B	0.5	2	2	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-09-7	Potassium	1770	ug/L		50	150	150	1	P	JWJ	05/31/16 20:42	053116B-1	1570819
7782-49-2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-23-5	Sodium	3700	ug/L		100	300	300	1	P	JWJ	05/31/16 20:42	053116B-1	1570819
7440-24-6	Strontium	127	ug/L		2	10	10	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-29-1	Thorium	0.383	ug/L	U	0.383	2	2	1	MS	PRB	06/09/16 00:41	160608-4	1570822
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BCD1	06/03/16 16:56	160603-2	1570822
7440-61-1	Uranium	0.539	ug/L		0.067	0.2	0.2	1	MS	PRB	06/09/16 00:41	160608-4	1570822
7440-62-2	Vanadium	3.33	ug/L	B	1	5	5	1	P	JWJ	05/31/16 20:42	053116B-1	1570819
7440-66-6	Zinc	13.5	ug/L		3.5	10	10	1	MS	BCD1	06/03/16 16:56	160603-2	1570822

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570819	1570818	SW846 3005A	50	mL	50	mL	05/31/16	SXW1
1570822	1570821	SW846 3005A	50	mL	50	mL	05/31/16	SXW1
1573425	1573424	SW846 3005A	25	mL	25	mL	06/13/16	JP1

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 23, 2016

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CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 398286

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570822										
QC1203557723	LCS										
Aluminum	2000			2000	ug/L		100	(80%-120%)	BCD1	06/03/16	15:16
Antimony	50.0			52.2	ug/L		104	(80%-120%)			
Arsenic	50.0			51.6	ug/L		103	(80%-120%)			
Barium	50.0			49.0	ug/L		98	(80%-120%)			
Cadmium	50.0			50.7	ug/L		101	(80%-120%)			
Chromium	50.0			50.9	ug/L		102	(80%-120%)			
Cobalt	50.0			50.9	ug/L		102	(80%-120%)			
Copper	50.0			53.7	ug/L		107	(80%-120%)	PRB	06/08/16	22:42
Lead	50.0			50.4	ug/L		101	(80%-120%)	BCD1	06/03/16	15:16
Manganese	50.0			49.1	ug/L		98.2	(80%-120%)			
Molybdenum	50.0			51.7	ug/L		103	(80%-120%)			
Nickel	50.0			51.5	ug/L		103	(80%-120%)			
Selenium	50.0			54.9	ug/L		110	(80%-120%)			
Silver	50.0			52.9	ug/L		106	(80%-120%)			
Strontium	50.0			56.3	ug/L		113	(80%-120%)			
Thallium	50.0			49.2	ug/L		98.5	(80%-120%)			
Thorium	50.0			49.6	ug/L		99.2	(80%-120%)	PRB	06/09/16	00:15
Tin	50.0			54.3	ug/L		109	(80%-120%)	BCD1	06/03/16	15:16
Uranium	50.0			49.7	ug/L		99.3	(80%-120%)	PRB	06/09/16	00:15
Zinc	50.0			53.8	ug/L		108	(80%-120%)	BCD1	06/03/16	15:16

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QC Summary

Workorder: 398286

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570822										
QC1203557722	MB										
Aluminum			U	15.0	ug/L				BCD1	06/03/16	15:10
Antimony			B	1.27	ug/L						
Arsenic			U	1.70	ug/L						
Barium			U	0.600	ug/L						
Cadmium			U	0.110	ug/L						
Chromium			U	2.00	ug/L						
Cobalt			U	0.100	ug/L						
Copper			U	0.350	ug/L				PRB	06/08/16	22:39
Lead			U	0.500	ug/L				BCD1	06/03/16	15:10
Manganese			U	1.00	ug/L						
Molybdenum			U	0.165	ug/L						
Nickel			U	0.500	ug/L						
Selenium			U	1.50	ug/L						
Silver			U	0.200	ug/L						
Strontium			U	2.00	ug/L						
Thallium			U	0.450	ug/L						
Thorium			U	0.383	ug/L				PRB	06/09/16	00:13
Tin			U	1.00	ug/L				BCD1	06/03/16	15:10
Uranium			U	0.067	ug/L				PRB	06/09/16	00:13
Zinc			U	3.50	ug/L				BCD1	06/03/16	15:10
QC1203557724	398282001	MS									
Aluminum	2000	U	15.0	2040	ug/L	102	(75%-125%)			06/03/16	15:30

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QC Summary

Workorder: 398286

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570822										
Antimony	50.0	U	1.00	52.0	ug/L		103	(75%-125%)	BCD1	06/03/16	15:30
Arsenic	50.0	U	1.70	51.1	ug/L		102	(75%-125%)			
Barium	50.0	U	0.600	50.0	ug/L		99.7	(75%-125%)			
Cadmium	50.0	U	0.110	50.8	ug/L		101	(75%-125%)			
Chromium	50.0	U	2.00	51.3	ug/L		102	(75%-125%)			
Cobalt	50.0	U	0.100	53.2	ug/L		106	(75%-125%)			
Copper	50.0	B	0.400	53.8	ug/L		107	(75%-125%)	PRB	06/08/16	22:48
Lead	50.0	U	0.500	49.6	ug/L		98.9	(75%-125%)	BCD1	06/03/16	15:30
Manganese	50.0	U	1.00	50.4	ug/L		100	(75%-125%)			
Molybdenum	50.0	U	0.165	50.8	ug/L		101	(75%-125%)			
Nickel	50.0	U	0.500	51.9	ug/L		103	(75%-125%)			
Selenium	50.0	B	1.71	54.5	ug/L		106	(75%-125%)			
Silver	50.0	U	0.200	52.4	ug/L		105	(75%-125%)			
Strontium	50.0	U	2.00	56.8	ug/L		113	(75%-125%)			
Thallium	50.0	U	0.450	48.3	ug/L		96	(75%-125%)			
Thorium	50.0	U	0.383	49.8	ug/L		99.2	(75%-125%)	PRB	06/09/16	00:18
Tin	50.0	U	1.00	54.0	ug/L		107	(75%-125%)	BCD1	06/03/16	15:30
Uranium	50.0	B	0.092	50.0	ug/L		99.8	(75%-125%)	PRB	06/09/16	00:18
Zinc	50.0	U	3.50	52.7	ug/L		103	(75%-125%)	BCD1	06/03/16	15:30
QC1203557725	398282001	MSD									
Aluminum	2000	U	15.0	2060	ug/L	1.04	103	(0%-20%)		06/03/16	15:36
Antimony	50.0	U	1.00	51.7	ug/L	0.602	102	(0%-20%)			

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QC Summary

Workorder: 398286

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570822										
Arsenic	50.0	U	1.70	52.6	ug/L	2.74	105	(0%-20%)	BCD1	06/03/16	15:36
Barium	50.0	U	0.600	49.7	ug/L	0.62	99.1	(0%-20%)			
Cadmium	50.0	U	0.110	50.3	ug/L	0.984	100	(0%-20%)			
Chromium	50.0	U	2.00	51.3	ug/L	0.0624	102	(0%-20%)			
Cobalt	50.0	U	0.100	50.8	ug/L	4.61	101	(0%-20%)			
Copper	50.0	B	0.400	54.0	ug/L	0.363	107	(0%-20%)	PRB	06/08/16	22:52
Lead	50.0	U	0.500	50.8	ug/L	2.57	101	(0%-20%)	BCD1	06/03/16	15:36
Manganese	50.0	U	1.00	50.0	ug/L	0.772	99.7	(0%-20%)			
Molybdenum	50.0	U	0.165	51.9	ug/L	2.14	104	(0%-20%)			
Nickel	50.0	U	0.500	51.8	ug/L	0.237	103	(0%-20%)			
Selenium	50.0	B	1.71	56.3	ug/L	3.22	109	(0%-20%)			
Silver	50.0	U	0.200	52.3	ug/L	0.252	104	(0%-20%)			
Strontium	50.0	U	2.00	56.8	ug/L	0.0793	113	(0%-20%)			
Thallium	50.0	U	0.450	49.7	ug/L	2.86	98.8	(0%-20%)			
Thorium	50.0	U	0.383	49.8	ug/L	0.108	99.3	(0%-20%)	PRB	06/09/16	00:20
Tin	50.0	U	1.00	53.8	ug/L	0.397	107	(0%-20%)	BCD1	06/03/16	15:36
Uranium	50.0	B	0.092	49.8	ug/L	0.317	99.5	(0%-20%)	PRB	06/09/16	00:20
Zinc	50.0	U	3.50	54.9	ug/L	4.15	108	(0%-20%)	BCD1	06/03/16	15:36
QC1203557726	398282001	SDILT									
Aluminum		U	10.5 DU	75.0	ug/L	N/A		(0%-10%)		06/03/16	15:50
Antimony		U	0.467 DU	5.00	ug/L	N/A		(0%-10%)			
Arsenic		U	0.185 DU	8.50	ug/L	N/A		(0%-10%)			

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QC Summary

Workorder: 398286

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570822										
Barium		U	0.132	DU	3.00	ug/L	N/A	(0%-10%)	BCD1	06/03/16	15:50
Cadmium		U	0.074	DU	0.550	ug/L	N/A	(0%-10%)			
Chromium		U	0.492	DU	10.0	ug/L	N/A	(0%-10%)			
Cobalt		U	0.072	DU	0.500	ug/L	N/A	(0%-10%)			
Copper		B	0.400	DU	1.75	ug/L	N/A	(0%-10%)	PRB	06/08/16	22:58
Lead		U	0.123	DU	2.50	ug/L	N/A	(0%-10%)	BCD1	06/03/16	15:50
Manganese		U	0.216	DU	5.00	ug/L	N/A	(0%-10%)			
Molybdenum		U	0.152	DU	0.825	ug/L	N/A	(0%-10%)			
Nickel		U	0.194	DU	2.50	ug/L	N/A	(0%-10%)			
Selenium		B	1.71	DU	7.50	ug/L	N/A	(0%-10%)			
Silver		U	0.076	DU	1.00	ug/L	N/A	(0%-10%)			
Strontium		U	0.125	DU	10.0	ug/L	N/A	(0%-10%)			
Thallium		U	0.255	DU	2.25	ug/L	N/A	(0%-10%)			
Thorium		U	0.204	DU	1.92	ug/L	N/A	(0%-10%)	PRB	06/09/16	00:23
Tin		U	0.415	DU	5.00	ug/L	N/A	(0%-10%)	BCD1	06/03/16	15:50
Uranium		B	0.092	DU	0.335	ug/L	N/A	(0%-10%)	PRB	06/09/16	00:23
Zinc		U	0.941	DU	17.5	ug/L	N/A	(0%-10%)	BCD1	06/03/16	15:50
Batch	1573425										
QC1203564607	LCS										
Beryllium			50.0			50.3	ug/L		101	(80%-120%)	SKJ 06/17/16 07:52
QC1203564606	MB										
Beryllium				U		0.200	ug/L				06/17/16 07:50
QC1203564608	398282001	MS									
Beryllium			50.0	U	0.200		ug/L		101	(75%-125%)	06/17/16 07:55

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QC Summary

Workorder: 398286

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch 1573425											
QC1203564609	398282001	MSD									
Beryllium			50.0	U	0.200	50.9	ug/L	0.376	102	(0%-20%)	SKJ 06/17/16 07:56
QC1203564610	398282001	SDILT									
Beryllium				U	0.016 DU	1.00	ug/L	N/A		(0%-10%)	06/17/16 08:00
Metals Analysis-ICP											
Batch 1570819											
QC1203557710	LCS										
Antimony			500			506	ug/L		101	(80%-120%)	JWJ 05/31/16 19:42
Arsenic			500			506	ug/L		101	(80%-120%)	
Barium			500			509	ug/L		102	(80%-120%)	
Beryllium			500			504	ug/L		101	(80%-120%)	
Boron			500			501	ug/L		100	(80%-120%)	
Cadmium			500			504	ug/L		101	(80%-120%)	
Calcium			5000			5390	ug/L		108	(80%-120%)	
Chromium			500			507	ug/L		101	(80%-120%)	
Cobalt			500			503	ug/L		101	(80%-120%)	
Copper			500			515	ug/L		103	(80%-120%)	
Iron			5000			5260	ug/L		105	(80%-120%)	
Magnesium			5000			5490	ug/L		110	(80%-120%)	
Manganese			500			507	ug/L		101	(80%-120%)	
Nickel			500			498	ug/L		99.6	(80%-120%)	
Potassium			5000			5160	ug/L		103	(80%-120%)	
Silver			500			499	ug/L		99.8	(80%-120%)	
Sodium			5000			5240	ug/L		105	(80%-120%)	

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1570819										
Strontium	500			519	ug/L		104	(80%-120%)			
Vanadium	500			512	ug/L		102	(80%-120%)	JWJ	05/31/16	19:42
Zinc	500			509	ug/L		102	(80%-120%)			
Antimony	QC1203557709 MB	U		3.50	ug/L					05/31/16	19:39
Arsenic		U		5.00	ug/L						
Barium		U		1.00	ug/L						
Beryllium		U		1.00	ug/L						
Boron		U		15.0	ug/L						
Cadmium		U		1.00	ug/L						
Calcium		U		50.0	ug/L						
Chromium		U		1.00	ug/L						
Cobalt		U		1.00	ug/L						
Copper		U		3.00	ug/L						
Iron		U		30.0	ug/L						
Magnesium		U		110	ug/L						
Manganese		U		2.00	ug/L						
Nickel		U		1.50	ug/L						
Potassium		U		50.0	ug/L						
Silver		U		1.00	ug/L						
Sodium		U		100	ug/L						
Strontium		U		1.00	ug/L						
Vanadium		U		1.00	ug/L						

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1570819										
Zinc				U	3.30	ug/L			JWJ	05/31/16	19:39
Antimony	QC1203557711 398282001 MS	500	U	3.50	528	ug/L	106	(75%-125%)		05/31/16	19:47
Arsenic		500	U	5.00	524	ug/L	104	(75%-125%)			
Barium		500	U	1.00	526	ug/L	105	(75%-125%)			
Beryllium		500	U	1.00	531	ug/L	106	(75%-125%)			
Boron		500	U	15.0	517	ug/L	103	(75%-125%)			
Cadmium		500	U	1.00	518	ug/L	103	(75%-125%)			
Calcium		5000	U	50.0	5370	ug/L	107	(75%-125%)			
Chromium		500	U	1.00	518	ug/L	104	(75%-125%)			
Cobalt		500	B	1.03	524	ug/L	105	(75%-125%)			
Copper		500	U	3.00	523	ug/L	105	(75%-125%)			
Iron		5000	U	30.0	5250	ug/L	105	(75%-125%)			
Magnesium		5000	U	110	5440	ug/L	108	(75%-125%)			
Manganese		500	U	2.00	516	ug/L	103	(75%-125%)			
Nickel		500	U	1.50	519	ug/L	104	(75%-125%)			
Potassium		5000	U	50.0	5020	ug/L	100	(75%-125%)			
Silver		500	B	1.29	510	ug/L	102	(75%-125%)			
Sodium		5000	U	100	5160	ug/L	103	(75%-125%)			
Strontium		500	U	1.00	507	ug/L	101	(75%-125%)			
Vanadium		500	U	1.00	521	ug/L	104	(75%-125%)			
Zinc		500	U	3.30	524	ug/L	105	(75%-125%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1570819										
QC1203557712	398282001	MSD									
Antimony	500	U	3.50	537	ug/L	1.75	107	(0%-20%)	JWJ	05/31/16	19:50
Arsenic	500	U	5.00	534	ug/L	1.76	106	(0%-20%)			
Barium	500	U	1.00	531	ug/L	0.887	106	(0%-20%)			
Beryllium	500	U	1.00	536	ug/L	0.997	107	(0%-20%)			
Boron	500	U	15.0	521	ug/L	0.898	104	(0%-20%)			
Cadmium	500	U	1.00	522	ug/L	0.841	104	(0%-20%)			
Calcium	5000	U	50.0	5420	ug/L	0.981	108	(0%-20%)			
Chromium	500	U	1.00	524	ug/L	1.11	105	(0%-20%)			
Cobalt	500	B	1.03	531	ug/L	1.29	106	(0%-20%)			
Copper	500	U	3.00	531	ug/L	1.5	106	(0%-20%)			
Iron	5000	U	30.0	5290	ug/L	0.717	106	(0%-20%)			
Magnesium	5000	U	110	5510	ug/L	1.34	110	(0%-20%)			
Manganese	500	U	2.00	523	ug/L	1.4	105	(0%-20%)			
Nickel	500	U	1.50	523	ug/L	0.746	105	(0%-20%)			
Potassium	5000	U	50.0	5170	ug/L	2.81	103	(0%-20%)			
Silver	500	B	1.29	515	ug/L	1.03	103	(0%-20%)			
Sodium	5000	U	100	5210	ug/L	0.969	104	(0%-20%)			
Strontium	500	U	1.00	514	ug/L	1.31	103	(0%-20%)			
Vanadium	500	U	1.00	526	ug/L	0.951	105	(0%-20%)			
Zinc	500	U	3.30	532	ug/L	1.52	106	(0%-20%)			
QC1203557713	398282001	SDILT									
Antimony		U	-7.23 DU	17.5	ug/L	N/A		(0%-10%)		05/31/16	19:53

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QC Summary

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Parmname	NOM	Sample Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP										
Batch	1570819									
Arsenic	U	1.73 DU	25.0	ug/L	N/A		(0%-10%)	JWJ	05/31/16	19:53
Barium	U	-0.0178 DU	5.00	ug/L	N/A		(0%-10%)			
Beryllium	U	0.0674 DU	5.00	ug/L	N/A		(0%-10%)			
Boron	U	1.68 DU	75.0	ug/L	N/A		(0%-10%)			
Cadmium	U	0.0261 DU	5.00	ug/L	N/A		(0%-10%)			
Calcium	U	4.91 DU	250	ug/L	N/A		(0%-10%)			
Chromium	U	-0.138 DU	5.00	ug/L	N/A		(0%-10%)			
Cobalt	B	1.03 DU	5.00	ug/L	N/A		(0%-10%)			
Copper	U	0.535 DU	15.0	ug/L	N/A		(0%-10%)			
Iron	U	-0.598 DU	150	ug/L	N/A		(0%-10%)			
Magnesium	U	17.0 DU	550	ug/L	N/A		(0%-10%)			
Manganese	U	0.0986 DU	10.0	ug/L	N/A		(0%-10%)			
Nickel	U	0.732 DU	7.50	ug/L	N/A		(0%-10%)			
Potassium	U	-10.9 DU	250	ug/L	N/A		(0%-10%)			
Silver	B	1.29 D	1.11	ug/L	329		(0%-10%)			
Sodium	U	-4.63 DU	500	ug/L	N/A		(0%-10%)			
Strontium	U	0.0711 DU	5.00	ug/L	N/A		(0%-10%)			
Vanadium	U	0.204 DU	5.00	ug/L	N/A		(0%-10%)			
Zinc	U	0.848 DU	16.5	ug/L	N/A		(0%-10%)			

Notes:

The Qualifiers in this report are defined as follows:

GEL LABORATORIES LLC

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
*	Duplicate analysis not within control limits										
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995										
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).										
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.										
D	Results are reported from a diluted aliquot of sample.										
E	Reported value is estimated due to interferences. See comment in narrative.										
M	Duplicate precision not met.										
N	Spike Sample recovery is outside control limits.										
S	Reported value determined by the Method of Standard Additions (MSA)										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL398286
Work Order #: 398286**

Product: SRISO_SEP_PRECIP_GPC: COMMON

Analytical Method: SRISO_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 17

Analytical Batch: 1572720

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
398286008	B34YW1
1203562624	Method Blank (MB)
1203562625	397971005(NonSDG) Sample Duplicate (DUP)
1203562626	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 398286008 (B34YW1) was verified by recounting at least five days from the separation date. The recount is reported.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC
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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company
Client SDG: GEL398286 GEL Work Order: 398286

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: **Kate Gellatly**

Date: **23 JUN 2016**

Title: **Analyst I**

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

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SDG Number: GEL398286
Lab Sample ID: 398286008

Client: CPRC001
Date Collected: 05/25/2016 12:15
Date Received: 05/27/2016 09:30

Project: CPRC01I16023
Matrix: WATER

Client ID: B34YW1
Batch ID: 1572720
Run Date: 06/21/2016 08:35
Data File: S1572720r2.xls
Prep Batch: 1572720
Prep Date: 06/15/2016 00:00

Method: SRISO_SEP_PRECIP_GPC
Analyst: KSD1
Aliquot: 300 mL
Prep Method: EPA 905.0 Modified/DOE RP5

Prep Basis: "As Received"
SOP Ref: GL-RAD-A-004
Instrument: PIC7D
Count Time: 60 min

CAS No.	Parname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90		6.34	pCi/L	+/-0.995	1.41	0.857	2.00
Surrogate/Tracer recovery								
		Result	Nominal	Units	Recovery%	Acceptable Limits		
	Strontium Carrier	7.10	7.37	mg	96.4	(40%-110%)		

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

Quality Control Summary

June 23, 2016
GEL LABORATORIES LLC
 2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 23, 2016
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Client : CH2MHill Plateau Remediation Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Workorder: 398286

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Gas Flow										
Batch	1572720									
QC1203562624	MB									
Strontium-90				U	-0.738	pCi/L		KSD1	06/16/16	17:19
			Uncert:		+/-0.697					
			TPU:		+/-0.697					
**Strontium Carrier		7.37			6.50	mg	REC:	88	(40%-110%)	
QC1203562625	397971005 DUP									
Strontium-90			U	0.620	U	1.32	pCi/L			06/16/16
			Uncert:	+/-0.841	+/-0.984		RPD:	0	N/A	17:17
			TPU:	+/-0.847	+/-1.01		RER:	1.04	(0-2)	
**Strontium Carrier		7.37		5.70	5.80	mg	REC:	79	(40%-110%)	
QC1203562626	LCS									
Strontium-90		73.0			74.7	pCi/L	REC:	102	(80%-120%)	06/16/16
			Uncert:		+/-4.40					17:19
			TPU:		+/-13.0					
**Strontium Carrier		7.37			6.10	mg	REC:	83	(40%-110%)	

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

QC Summary

Workorder: 398286

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
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N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.